



US007034769B2

(12) **United States Patent**  
**Surducan et al.**

(10) **Patent No.:** **US 7,034,769 B2**  
(45) **Date of Patent:** **Apr. 25, 2006**

(54) **MODIFIED PRINTED DIPOLE ANTENNAS  
FOR WIRELESS MULTI-BAND  
COMMUNICATION SYSTEMS**

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(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 85 days.

(21) Appl. No.: **10/718,568**

(22) Filed: **Nov. 24, 2003**

(65) **Prior Publication Data**

US 2005/0110696 A1 May 26, 2005

(51) **Int. Cl.**  
**H01Q 9/16** (2006.01)

(52) **U.S. Cl.** ..... **343/793; 343/795; 343/700 MS**

(58) **Field of Classification Search** ..... **343/793,**  
**343/795, 792, 700 MS, 702, 829, 846**  
See application file for complete search history.

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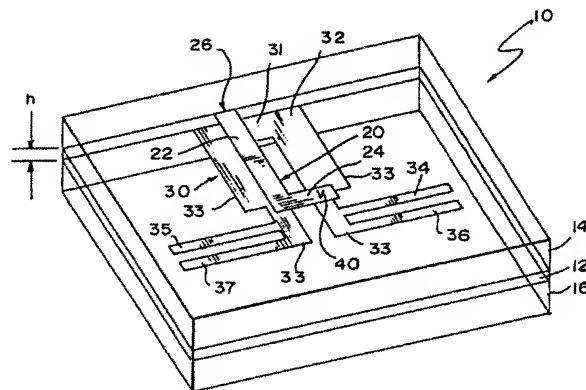
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(57) **ABSTRACT**

A dipole antenna for a wireless communication device, which includes a first conductive element superimposed on a portion of and separated from a second conductive element by a first dielectric layer. A first conductive via connects the first and second conductive elements through the first dielectric layer. The second conductive element is generally U-shaped. The second conductive element includes a plurality of spaced conductive strips extending transverse from adjacent ends of the legs of the U-shape. Each strip is dimensioned for a different center frequency  $\lambda_0$ . The first conductive element may be L-shaped, and one of the legs of the L-shape being superimposed on one of the legs of the U-shape. The first conductive via connects the other leg of the L-shape to the other leg of the U-shape.

**19 Claims, 15 Drawing Sheets**



# US 7,034,769 B2

Page 2

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